Available online at www.sciencedirect.com
ScienceDirect
Procedia Economics and Finance 23 (2015) 1635 – 1640
Procedia Economics and Finance
www.elsevier.com/locate/procedia

2nd GLOBAL CONFERENCE on BUSINESS, ECONOMICS, MANAGEMENT and TOURISM, 30-31 October 2014, Prague, Czech Republic

Type of The Lithuanian Financial System

Askoldas Podviezko[a]*

[a]*Vilnius Gediminas Technical University, Saulėtekio al. 11, LT–10223 Vilnius, Lithuania*

Abstract

Interest in determining type of the financial system and investigation of its influences emerged in the end of sixties, when Goldsmith raised a hypothesis, that structure of financial system has influence on growth. Later the scope of investigation widened and now along with growth topic includes influence of the type of financial system on financial stability, culture, juridical system of a country. Fostering financial stability is a complex process, which scope is wider than applying solely monetary and fiscal policies in a country. In this respect particular attention should be paid to financial stability of monetary financial institutions, as well as reputation and competence of their management. Type of financial system, namely bank-based and market-based, determines major financial institutions, stability of which is crucial for a country's financial system. Type of country's financial system must be determined to equip financial supervisors with more efficient decision-making tools. Quantitative criteria of the type of financial system is proposed in this paper. Type of Lithuanian financial system is determined based on proposed criteria and on comparative analysis with developed countries, which have established types of financial system.

Selection and/ peer-review under responsibility of Academic World Research and Education Center

Keywords: Type of financial system; bank-based; market-based; financial stability; evaluation

1. Introduction

Interest in determining type of financial system emerged in the end of sixties, when R. W. Goldsmith raised a hypothesis, that structure of financial system has influence on growth and proposed to distinguish bank-based and market-based financial systems (Goldsmith, 1969). Both in this seminal source, and in the classic book by Allen, Gale (2000) "Comparing Financial Systems" five countries with historically formed financial systems were determined. Germany, France, and Japan then commenced to be served as benchmarks for bank-based financial

* Askoldas Podviezko. Tel.: +370 604 23820.
E-mail address: askoldas@gmail.com

Selection and/ peer-review under responsibility of Academic World Research and Education Center
doi:10.1016/S2212-5671(15)00378-0

systems, while The United States of America, and the United Kingdom were distinguished as the countries with the market-based financial system.

Initially, in the developing theory of influence of structure of financial system on growth the opinion that the structure has a mediocre influence on growth was dominating (Levine 2002; 2005). Even after a number of investigations of influence of the type of financial system on economic growth, scientists did not distinguished a particular type as the most efficient (Allen et al., 2010). This paper suggests that different types of finance should be used to positively influence growth of economy. In other words, a country should strive to create an optimally mixed financial system. Growth of economy implies that the market-based component of the financial system becomes more important, serious doubts on its positive effect on growth were seeded by Deidda, Fattouh (2008), who showed that in the initially bank-based financial system rising influence of the market-based component had negative effect on growth.

The opposite influence was also noted. Structure of the financial system is changing with the growth of economy (Levine 1997). The global trend of growth of the market-based component of financial system in growing economies was noted in the historical analysis (Goldsmith, 1969), and by subsequent investigations (Allen and Santomero, 2001; Zervos, 1998; Levine, 1998; Demirgüç-Kunt, Levine, 2001; Demirgüç-Kunt et al., 2011).

Analysis of suitability of a particular structure of the financial system for the juridical system of a country revealed inter-relationship of the structure of the financial system with certain types of juridical systems. Bank-based financial systems are more appropriate for less developed and less flexible juridical systems, where creditor's rights are insufficiently protected (Ergungor 2008; Beck, Demirgüç-Kunt, Levine, 2006), while market-based financial systems are more suitable in such cases, when the juridical system is more developed (Allen, Oura 2004; Tadesse, 2002).

Another trend of thought investigating relationship of structure of financial system with particularities of a country is investigation of the link between the structure of the financial system and culture of a country. Kwok, Tadesse (2005) found that the bank-based financial system is more suitable in the countries, where culture is inclined towards risk aversion. Aggarwal, Goodell (2009) indicated more cultural factors, which influence the relative strength of each component of financial system.

The state of the art economic thought on the topic of appropriateness of one or another type of financial system for a particular country has been expressed in the conference "Financial Structure and Economic Development" organised by the World Bank on 16 June, 2011. Lin et al. (2009) stressed that the optimal structure of the financial system should be developed in accordance with particularities of a country. Demirgüç-Kunt et al. 2011; Kpodar, Singh, 2011, etc. showed that the structure of the financial system has influence on growth of country's economy.

The contemporary scope of investigation has widened and now includes influence of the type of financial system on financial stability (Allen 2004; Vitols 2001; Podviezko 2013), and even political stability (Aggarwal, Goodell 2009). Fostering financial stability is a complex process, which scope is wider than applying solely monetary and fiscal policies in a country. Financial stability depends on magnitude of the sovereign debt and its management, level of unemployment, competitive strength of a country, level of competition between financial institutions, stability of taxation system, stability of exports, etc. Nevertheless, financial stability of monetary financial institutions is the major aspect influencing financial stability, as well as reputation and competence of their management. Type of financial system, namely bank-based and market-based, determines financial institutions, which stability is crucial for a country's financial system. Type of country's financial system must be determined to equip financial supervisors with more efficient decision-making tools. And a suitable structure of the financial system of a country should be developed to more efficiently cope with financial crises (Allen, Gu, Kowalewski, 2012). In case if the financial system is found to be bank-based, then a particular attention should be paid to stability of its commercial banks and to methods of its evaluation (Ginevicius, Podviezko, 2011, 2013; Ginevicius, Podvezko, Podviezko, 2012; Brauers, Ginevicius, Podviezko, 2012; Podviezko, Ginevicius 2010; Podvezko, Podviezko, 2010a,b; Brauers, Ginevicius, Podviezko, 2014).

There are positive and negative features of bank-based and market-based financial systems. From the brief outlined above overview of literature it could be observed that bank-based or market-based financial system has advantages depending on the environment of a country, on type of juridical system, culture, etc. Thus, knowledge of the type of a financial system of a country enables to better allocate of resources among financial intermediaries, and to conduct their efficient governing, and consequently better influence growth and financial stability. Better understanding the type of the financial system of a particular country can enable financial supervisors to make better decisions in the financial sector, and create better opportunities for increasing influence of bank-based or market-based component of country's financial system.

For the purpose of investigating the type of Lithuanian financial system a quantitative criterion of the type of financial system is proposed in this paper. Type of Lithuanian financial system is determined based on the proposed criterion by comparing obtained its values with the ones of benchmark countries. The list of countries to be compared was chosen to comprise Lithuania's neighbouring countries: Poland, Latvia and Estonia, and included reference countries with historically formed financial systems as was stated above.

2. A Criterion for evaluation of the type of financial system

The proposed in this paper the quantitative criterion for evaluation of the type of financial system comprises five sub-criteria, which represent either the bank-based component of the financial system, or the market-based component. The higher is the value of each criterion, the more bank-based, or respectively market-based is the financial system.

Criteria were chosen to represent such characteristics as the size, activity, and concentration. The criterion 1 reveals the size of the bank-based component of the financial system, while criterion 4 reflects the size of the market-based component relative to the GDP. Criteria 2 and 5 reflect activity of the corresponding components of the financial system. Criteria 1–2, and 4–5 are used by Demirgüç-Kunt, Levine (2001). The criterion 3 reflects concentration of the banking sector and is measured as the relative size of three biggest banks in the banking system in accordance with the formula (1):

$$C = \frac{\sum_{i \in I'} A_i}{\sum_{i \in I} A_i}, \tag{1}$$

where I' is the index for the three largest banks of a country, while I is the index for the set of all country's banks.

The latter criterion was chosen based on the finding of Allen, Gale (2000) that the higher is the concentration of banks in the banking sector the closer is the country's financial system to the bank-based type.

Criteria for evaluation of the type of the financial system are presented in Table 1.

Table 1. Criteria of the type of the financial system.

No.	The component of the financial system	Criterion
1.		Assets of the banking sector/GDP
2.	Bank-based	Private credits/GDP
3.		Concentration in the banking sector
4.	Market-based	Capitalisation of the financial market/GDP
5.		Turnover of the financial market/GDP

Data for values of criteria were obtained from the statistical database Beck et al., 2010. Averages of values for the period 2000–2009 were taken for making a comparative analysis, which was carried out using normalised values of the criteria in accordance with the following formula (2) (Podviezko, 2012; Ginevicius et al., 2012):

$$\tilde{r}_{ij} = \frac{r_{ij}}{\sum_{j=1}^{n} r_{ij}} \tag{2}$$

where $\tilde{r}_{ij}$ are normalised values of criteria, r_{ij} –are averages of statistical data for the period 2000–2009, n – the number of countries to be compared. Normalised values of the criteria are presented in Table 2.

Table 2. Normalised average values of criteria revealing the type of financial system for the period 2000–2009, of developing and developed countries.

No.	Criterion	Developing countries				Developed countries				
		Poland	Lithuania	Latvia	Estonia	France	Germany	Japan	U.K.	U.S.
1.	Assets of the banking sector/GDP	0.054	0.049	0.076	0.083	0.140	0.171	0.230	0.111	0.086
2.	Private credits/GDP	0.050	0.055	0.088	0.102	0.147	0.175	0.181	0.114	0.089
3.	Concentration in the banking sector	0.118	0.145	0.097	0.173	0.102	0.127	0.078	0.110	0.052
4.	Capitalisation of the financial market/GDP	0.059	0.039	0.018	0.061	0.183	0.108	0.167	0.091	0.275
5.	Turnover of the financial market/GDP	0.021	0.004	0.002	0.017	0.163	0.129	0.156	0.070	0.439

We can observe from the data in Table 2 that assets of the banking sector, and volume of private credits of developing countries (Poland, Lithuania, Latvia, and Estonia) are smaller than values of the same criteria of developed countries (France, Germany, Japan, U.K., and U.S.) compared to countries' GDP. Capitalisation and turnover of the financial market are considerably smaller as well.

For comparing countries' types of financial systems the author proposes the criterion *T*, which is calculated in accordance with the following formula (3):

$$T_j = \frac{K_1+K_2+K_3}{K_4+K_5} \tag{3}$$

The nominator of the cumulative criterion comprises all maximising criteria, which sums up magnitudes of influence of the bank-based component of the financial system, while in the denominator criteria corresponding to the market-based component of the financial system are placed. Obtained values again are normalised in accordance with formula (2). Final values of the cumulative criterion *T* are shown in Fig. 1.

The value of the criterion *T* is the smallest in the U.S., where it equals to 0.009. This well corresponds to the known fact that type of the financial system of the U.S. is the most prominent market-based financial system in the world. In such financial systems, where banks' role is more dominant, values of the criterion *T* are higher. We note the trend of increasing importance of the market-based component of the financial system in developed countries as was stated in Section 1 for all countries except the U.K. Meanwhile, we note that the value of the criterion *T* in the U.K. exceeds the one in Germany due to decreased values of sub-criteria representing magnitude of importance of the market-based component of that country.

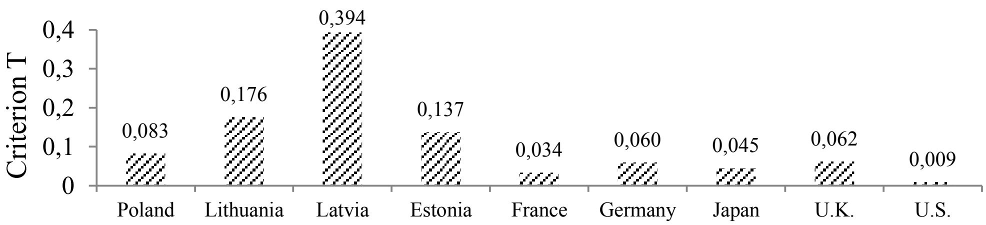

Fig. 1. Values of the criterion *T* of the type of the financial system.

The highest value of the criterion *T*=0.394 is attained in Latvia. The subsequent value of the criterion *T*=0.176 is in case of Lithuania, which is higher than the one of Germany, the country with the most prominent bank-based financial system among the compared countries. Consequently, the proposition of this paper develops to the stylised fact that *Lithuania has a prominent bank-based financial system*. The proposition is demonstrated by a high value of the criterion *T*. In the case of Lithuania the high value of the criterion *T* was determined, of course, not only by one of the highest concentration ratios, namely 0.145 of the banking sector among the countries in question after Estonia. While we can observe a relative weakness of the bank-based component of Lithuania comparing to the one in developed countries, such a high value of criterion *T* was attained because of a tiny market-based component of this country and its scarce activity, which effect the denominator of the criterion *T* making it small, consequently increasing value of the criterion. Turnover of the stock market comparing to the GDP in Lithuania is 106 times lower than the one in the U.S. and is 31–68 times lower comparing to other developed countries. Analogously, capitalisation of Lithuanian stock market comparing to the GDP is 2.8–7 times smaller comparing to the developed countries we chose.

Large values of the criterion *T* revealing magnitude of importance of the bank-based component of the financial system should be perceived in relative terms. In developing countries as Latvia and Lithuania the value of the criterion *T* is much higher than in developed countries, since the bank-based component of their financial systems covers almost their entire activity. Financial systems of developing countries are much less developed than the ones of developed countries. As values of the criterion *T* reveal the relative importance of the banking sector in financial systems, this criterion is not designed to capture the level of development of one or another component of financial system.

3. Conclusions

The paper attempted to propose a quantitative criterion revealing type of financial system, and to use this criterion for the purpose of determining the type of the Lithuanian financial system. The proposed criterion gauges such characteristics of bank-based and market-based components of a financial system as size and activity, and captures the rate of concentration of the banking sector. The criterion is designed in the way that the higher is the value of the criterion, the closer is the examined financial system to the bank-based type.

The Lithuanian financial system was compared to ones of developed countries with historically established financial systems, such as Germany, France, Japan, The United States of America, and the United Kingdom. For the sake of having a more comprehensive picture to the list of compared countries peer countries in the Baltic region, such as Poland, Latvia, and Estonia were included.

Values of the criterion were calculated using data for the period 2000–2009. Calculated values of the criterion explicitly demonstrated that the Lithuanian financial system is bank-based. Meanwhile, it was observed that the financial system of this country is less developed than the one of compared developed countries, and that high values of the proposed criterion *T* were attained both because of the scarce activity and very small size of market-based component of the financial system of Lithuania.

As value of the criterion *T* reveals the relative importance of the banking sector in financial systems, the criterion is not designed to capture the level of development of one or another component of financial system.

In addition, terms allowing to describe components of a mixed financial system, such as bank-based, and market-based, were proposed.

References

Aggarwal, R., & Goodell, J. W., (2009). Markets and institutions in financial intermediation: National characteristics as determinants. *Journal of Banking & Finance, 33*(10), 1770–1780.

Allen, F., (2004). The Efficiency and Stability of Banks and Markets. *Working Paper Research National Bank of Belgium*, (52), 1–27.

Allen, F., Gu, X., & Kowalewski, O., (2012). Financial crisis, structure and reform. *Journal of Banking & Finance, 36*(11), 2960–2973.

Allen, F., & Santomero, A. M., (2001). What do financial intermediaries do? *Journal of Banking & Finance, 25*(2), 271–294.

Allen, F., & Gale, D., (2000). Comparing financial systems. Cambridge, Mass: MIT Press.

Allen, F.; Oura H., (2004). Sustained Economic Growth and the Financial System. *IMES Discussion Paper Series*, (E-17): 1–35.

Goldsmith, R. W., (1969). Financial structure and development. New Haven, CT: Yale University Press.

Beck, T., Demirgüç-Kunt, A., & Levine, R., (2010). Financial Institutions and Markets across Countries and over Time: The Updated Financial Development and Structure Database. *World Bank Economic Review, 24*(1), 77–92.

Brauers, W. K., Ginevicius, R., & Podviezko, A., (2012). Evaluation of performance of Lithuanian commercial banks by multi-objective optimization. In R. Ginevicius, A. V. Rutkauskas, & J. Stankeviciene (Eds.), The 7th International Scientific Conference Business and Management'2012. Selected papers. (pp. 1042–1049). Vilnius, Lithuania: Technika.

Brauers, W., Ginevicius, R., & Podviezko, A., (2014). Development of a methodology of evaluation of financial stability of commercial banks. *Panoeconomicus, 61*(3), 349–367.

Levine, R., (2002). Bank-Based or Market-Based Financial Systems: Which Is Better? *Journal of Financial Intermediation, 11*(4), 398 – 428.

Levine, R., (2005). Chapter 12 Finance and Growth: Theory and Evidence. In P. Aghion and S. N. Durlauf (Ed.), *Handbook of Economic Growth* (Vol. 1, Part A, pp. 865–934). Elsevier.

Allen, F., Capie, F., Fohlin, C., Miyajima, H., Sylla, R., Wood, G., & Yafeh, Y., (2010). How important historically were financial systems for growth in the U.K., U.S., Germany, and Japan? http://fic.wharton.upenn.edu/fic/papers/10/10-27.

Deidda, L., & Fattouh, B., (2008). Banks, financial markets and growth. *Journal of Financial Intermediation, 17*(1), 6–36.

Demirgüç-Kunt, A. & Levine, R. (Eds.), (2001). Financial Structure and Economic Growth: A Cross-Country Comparison of Banks, Markets, and Development. Cambridge, MA and London, England: The MIT Press.

Demirgüç-Kunt, A; Feyen, E.; Levine, R., (2011). Optimal Financial Structures and Development: The Evolving Importance of Banks and Markets. http://siteresources.worldbank.org/INTFR/Resources/DemirgucFeyenLevine0 60311.pdf.

Ergungor, O. E., (2008). Financial system structure and economic growth: Structure matters. Market Microstructure and Implications for Regulatory Policies, 17(2), 292–305. doi:10.1016/j.iref.2006.09.001

Ginevicius, R., & Podviezko, A., 2011. A framework of evaluation of commercial banks. *Intellectual Economics, 1*(9), 37–53.

Ginevicius, R., Podvezko, V., Novotny, M., Komka, A., (2012). Comprehensive Quantitative Evaluation of the Strategic Potential of an Enterprise. Journal of Economic Computation and Economic Cybernetics Studies and Research, 46(1), 65–84.

Ginevicius, R., Podvezko, V., & Podviezko, A., (2012). Evaluation of Isolated Socio-Economical Processes by a Multi-Criteria Decision Aid Method ESP. In R. Ginevicius, A. V. Rutkauskas, & J. Stankeviciene (Eds.), The 7th International Scientific Conference Business and Management'2012. Selected papers (pp. 1083–1089). Vilnius, Lithuania: Technika.

Ginevicius, R., & Podviezko, A., (2013). The evaluation of financial stability and soundness of Lithuanian banks. *Ekonomska Istrazivanja-Economic Research, 26*(2), 191–208.

Kpodar, K., & Singh, R. J., (2011). Does financial structure matter for poverty? Evidence from developing countries, Policy Research Working Paper Series, (5915), 1–25.

Kwok, C. C. Y., & Tadesse, S., (2006). National culture and financial systems. *Journal of International Business Studies, 37*(2), 227–247.

Levine, R. (1997). Financial development and economic growth: views and agenda. *Journal of Economic Literature, 35*(2), 688–726.

Levine, R., & Zervos, S., (1998). Stock Markets, Banks, and Economic Growth. *The American Economic Review, 88*(3), 537–558.

Levine, R. (1998). The Legal Environment, Banks, and Long-Run Economic Growth. Journal of Money*, Credit & Banking, 30*(3), 596–613.

Lin, Y. L., Sun, X., & Jiang, Y., (2009). Toward a Theory of Optimal Financial Structure, *Policy Research Working Paper*, (5038), 1–29.

Podvezko, V., & Podviezko, A., (2010a). Dependence of multi-criteria evaluation result on choice of preference functions and their parameters. *Technological and Economic Development of Economy, 16*(1), 143–158.

Podvezko, V., & Podviezko, A., (2010b). Use and Choice of Preference Functions for Evaluation of Characteristics of Socio-Economical Processes. In R. Ginevicius, A. V. Rutkauskas, & R. Pocs (Eds.), The 6th International Scientific Conference Business and Management'2010. Selected papers. (pp. 1066–1071). Vilnius, Lithuania: Technika.

Podviezko, A., & Ginevicius, R., (2010). Economic Criteria Characterising Bank Soundness and Stability. In R. Ginevicius, A. V. Rutkauskas, & R. Pocs (Eds.), The 6th International Scientific Conference Business and Management'2010. Selected papers, (pp. 1072–1079). Vilnius, Lithuania: Technika.

Podviezko, A.,(2012). Augmenting Multicriteria Decision Aid Methods by Graphical and Analytical Reporting Tools. In L. Niedrite, R. Strazdina, & B. Wangler (Eds.), Workshops on Business Informatics Research (Vol. 106, pp. 236–251). Springer Berlin Heidelberg.

Podviezko, A., (2013). Evaluation of Financial Stability of Commercial Banks, Doctoral dissertation. Vilnius: Technika.

Tadesse, S., (2002). Financial Architecture and Economic Performance: International Evidence. *Journal of Financial Intermediation, 11*(4), 429–454.

Vitols, S., (2001). The Origins of Bank-Based and Market-Based Financial Systems: Germany, Japan, and the United States. In W. Streeck & K. Yamamura (Eds.), The origins of nonliberal capitalism: Germany and Japan in comparison (pp. 171–199). Ithaca: Cornell University Press.